

## **2015 ILRS Technical Workshop**

### **2.6 Thermo-optical vacuum testing of Galileo IOV laser retro-reflectors of GALILEO IOV LRA**

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We shall present the activities performed by INFN-LNF’s SCF\_Lab for the project “Thermo-optical vacuum testing of Galileo IOV laser retro-reflectors of GALILEO IOV LRA” as defined in ESA Contract No. 4000108617/13/NL/PA. We shall present the results of FFDP measurement in relevant space conditions of two selected among seven Galileo IOV CCRs provided by ESA.

Satellite Laser Ranging (SLR) of Laser Retro-reflector Arrays (LRAs) of CCRs is the state of the art technique for the most accurate orbit measurement, and LRAs are commonly integrated in Global Navigation Satellite System (GNSS) constellations. This way, SLR can provide instantaneous range measurements at millimeter-level precision, which can be compiled to provide accurate orbits [6].

Galileo constellation is one of the space research and development programs of the European Union and will literally help navigate users all over the world. Galileo satellites are also meant to be equipped with CCR LRAs. A reference for the performance of laser ranging on Galileo satellites is the FFDP of a retro-reflector in its design specifications. Measurements, performed in SCF\_Lab facility, of Galileo IOV laser retro-reflectors were compliant with design performance expectations.